

**Board of County Commissioners  
Leon County, Florida**

**Workshop on  
Volume Control and Flood Protection Regulations**

**Emphasis on Volume Control Regulations**

**1:00 - 2:30 p.m.  
Tuesday, October 28, 2003**

**Leon County Board of County Commission Chambers  
Leon County Courthouse, 5<sup>th</sup> Floor**

## Board of County Commissioners Workshop

Date of Workshop: October 28, 2003  
Date Submitted: October 22, 2003  
To: Honorable Chairman and Members of the Board  
From: Parwez Alam, County Administrator *PA*  
Gary W. Johnson, Director, Growth and Environmental Management  
Subject: Volume Control and Flood Protection Regulations Workshop

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**Statement of Purpose:**

Board discussion about regulations for volume control and flood protection.

**Background:**

At the September 17, 2003 Board meeting, the Commission directed staff to schedule a Flooded Property Acquisition and Flood Control Regulations workshop. This portion of the workshop covers regulations for volume control, a review of regulations that prevent development in the floodplain and flood protection regulations.

**Analysis:**

Currently, Leon County flood control regulations are enforced at the time that proposed new development is reviewed. Each of these regulations will be discussed as to the effectiveness in providing flood control.

New development is required to discharge stormwater at the same rate, or less, than the discharge rate before development. However, the volume of discharge can be greater than before development, except in regulated closed basins. In other words, as development occurs, more impervious is constructed resulting in more water flowing downhill. In areas that are very flat, at the bottom of the hill, or that have high water tables, this additional volume can cause flooding that is deeper and lasts longer.

Staff attempted to address this problem by adding new regulations, effective January 1, 2001, that helps prevent conveyance flooding from future development. If a site is greater than 2 acres and its discharge is greater than 2.5% of the flow in the conveyance, then a downstream analysis is required to show that no adverse impacts occur downstream or the applicant must significantly restrict the discharge from the site to minimize conveyance flooding. This will help minimize some conveyance flooding but still does not address the cumulative affects of volume increases on the floodplain at the bottom of the hill.

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discharge from the site to minimize conveyance flooding. This will help minimize some conveyance flooding but still does not address the cumulative affects of volume increases on the floodplain at the bottom of the hill.

This workshop is broken down into three specific areas: Volume Control Regulation Consideration, Existing Regulations For Newly Created Lots and Existing Undeveloped Floodplain Lots, and Flood Protection Ordinance Amendment Consideration.

**1. Volume Control Regulation Consideration:**

**What is Volume Control?**

Volume control refers to a volume of stormwater runoff in excess of the pre-development runoff volume generated by a particular storm event (usually the 100-year 24-hour event) that is retained onsite.

In general, as a development increases its impervious area, there is a corresponding increase in the volume of stormwater that is allowed to discharge from the stormwater pond that is constructed onsite.

For non-closed basin areas, current code requires water quality treatment and rate control, but **not** volume control. This means that the ponds are allowed to discharge this increased volume, but only at rates that are no greater than pre-development rates.

Without volume control, the result is that further downstream, these volumes begin to accumulate and increase flooding in both the conveyances and waterbodies.

Volume control would mean that the increased volume produced by a development site would have to retain this volume onsite and not be allowed to discharge it through a sand filter or a rate control structure. This volume would have to be either percolated through the pond bottom or re-used as irrigation for landscaping or natural area onsite.

**Current Mix of Leon County Stormwater Treatment Standards:**

1. At a minimum, the State of Florida Department of Environmental Protection (FDEP) standard of ½ inch over the area draining to the pond must be met. This volume can be retained and percolated onsite or treated through a sand filter and discharged offsite. Recovery of this volume must be within 72 hours.
2. Outstanding Florida Water (OFW) - Applies to FDEP designated OFWs. A standard of 3/4 inch over the area draining to the pond must be met. This volume can be retained and percolated onsite or treated through a sand filter and discharged offsite. Recovery of this

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- volume must be within 72 hours.
3. There are special stormwater treatment standards in special development zones for the Lake Jackson, Bradford Brook Chain-of-Lakes, Fred George, Lake McBride, Lake Lafayette and Lake Iamonia Basins. There are four options for treatment as follows:
    - (1) Wet detention - 1-1/2 inches over the area draining to the pond must be detained in a wet pool with wetland vegetation for nutrient uptake. The first half of this treatment volume can be discharged in 60 hours and the second half in 60 hours or more. (Typical layout in Attachment #1)
    - (2) Off-line retention - 3/4 inch over the area draining to the pond. This treatment volume is treated separately in one cell(off-line) of a two cell system. The second cell handles the rate portion of the system. Recovery of the treatment volume must be within 72 hours. (Typical layout in Attachment #2)
    - (3) Underdrained filtration (filter pond) - 1-1/8 inches over the area draining to the pond. This volume is treated through a sand filter before discharge. Recovery of the treatment volume must be within 36 hours. (Typical layout in Attachment #1)
    - (4) Swales (typically for roads) - 80% of 2.6 inches over the area draining to the swale. Recovery within 72 hours.
  4. Bradfordville Study Area - Applies to Bradfordville Study area only. A volume of runoff calculated as 4 inches times the total impervious area on a site must be retained in a retention facility. Recovery of this treatment volume must be within 72 hours.
  5. Lake Jackson 50-year retention - Applies to the Lake Jackson Basin only. Non-single family residential uses shall retain the post-development stormwater on-site for all storm events up to and including the 50-year 24-hour duration storm. One-half the volume must be recovered within 7 days, and the full volume within 30 days.
  6. Closed Basin (Volume Control) - Applies to closed basins only. Runoff volumes in excess of the pre-development runoff volume shall be retained in a retention pond for all storm events up to a 100-year, 24-hour duration storm. One-half the required pond volume shall be recovered within 7 days, and the full volume shall be recovered within 30 days. (Typical retention pond layout in Attachment #1)

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### **Water Quality by Filtration**

The most widely used form of stormwater treatment is detention with filtration. The required water quality treatment volume is recovered by the use of a sand filter as shown in Attachment #1. This is common since it is the easiest form of recovery for the treatment volume, especially on sites with soils that don't percolate well.

A literature review was conducted of previous research which quantified pollutant removal efficiencies associated with various stormwater treatment ponds. The research indicated that detention with filtration was the worst form of stormwater treatment. A summary of one of the studies is shown in Attachment #3. (Research by Harvey H. Harper, Ph.D., P.E.)

Dissolved nutrients pass through the filter medium and discharge to our lakes. Trapped particulate nitrogen and phosphorous were shown in some cases to undergo decomposition within the filter media which actually produced higher concentrations after discharge compared to the concentrations measured within the stormwater pond. ("Treatment Efficiency of Detention with Filtration Systems", by ERD, August 1993)

The FDEP State Water Policy Goal is to achieve 80% reduction by the stormwater pond for pollutants going into the pond. Filtration ponds do not meet that goal.

Based upon the literature review, there is little evidence to indicate that sand filter systems improve the operational performance of stormwater ponds. Some of the research indicates that sand filter systems may actually degrade the pollutant removal effectiveness of the stormwater pond.

### **Existing Volume Control Regulations.**

Volume control is not a new concept for of stormwater management. Current code requires volume control for all closed basins. Closed basins are naturally depressed or artificially closed off portions of the earth's surface for which there is no natural and normal outlet for runoff other than percolation, evaporation or discharge into a karst feature. Volume control is required to prevent the floodplain at the bottom of the closed basin from increasing its flood elevation. The areas that are currently required to meet volume control regulations are shown in Attachment #4.

If you subtract the City of Tallahassee and the Apalachicola National Forest from the land area of Leon County, the closed basin areas encompass approximately 30% of the remaining land area within the County (refer to Attachment #4). This means that we already have volume control regulations covering 30% of the land regulated by Leon County.

The specific Leon County Code citation that requires volume control is as follows:

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Section 10-188(b) *Volume control required.* Runoff volumes within regulated closed basins in excess of the pre-development runoff volume shall be retained for all storm events up to a 100-year, 24-hour duration storm. One-half the required pond volume shall be recovered within 7 days, and the full volume shall be recovered within 30 days.

**Advantages of Volume Control Regulations for all of Leon County:**

1. Prevents downstream flooding from increasing due to new development
2. Prevents having to perform full build-out floodplain analyses
3. Can actually decrease downstream flooding for some storm events
4. Provides the best water quality treatment of stormwater for protection of our watercourses and lakes
5. Will save the County costs by not having to perform water quality studies for the remaining drainage basins
6. In relation to stormwater, makes new development pay for itself
7. Simplifies the code with one central stormwater standard
8. Will assist in the implementation of the Total Maximum Daily Load (TMDL) program required by the Federal Government and the Florida Department of Environmental Protection (FDEP)
9. Endorsements by Eric Livingston of FDEP and Dr. Harvey Harper of ERD.
10. Complies with water policy guidelines proposed by the FDEP
11. Prevents costly downstream analyses which may be required during the Environmental Impact Analysis (EIA)
12. Provides aquifer recharge versus discharge downstream

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**Volume Control Advantage:**

**1. Prevents downstream flooding from increasing due to new development**

The principal foundation for volume control is that flooding will not be increased as a result of development. The only discharge that is allowed from a volume control (retention) pond is the pre-development volume. This is the rainfall runoff volume that leaves the site from its natural condition.

Current code requires volume control only for closed basins to protect the property at the bottom of the basin from having its floodplain elevation increased. Theoretically, the floodplain cannot increase if the additional volume caused by new development is retained in a stormwater retention pond and recovered onsite.

For non-closed basin areas, current code requires water quality treatment and rate control, but not volume control. This means that the ponds are allowed to discharge this increased volume, but only at rates that are no greater than pre-development rates. The result is that further downstream, these volumes begin to accumulate and increase flooding in both the conveyances and waterbodies.

Volume control regulations will prevent government from having to buy additional flooded properties caused by permitting that is performed today.

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**Volume Control Advantage:**

**2. Prevents having to perform full build-out floodplain analyses**

There has been discussion about performing full build-out floodplain analysis for the entire County. This could be considered as an alternative to volume control standards. Full build-out floodplain analysis would require that the County contract with an engineering consultant to model the entire County and use existing allowable zoning densities to calculate a theoretical build-out floodplain analysis for watercourses, floodways, waterbodies, etc. The County could then require easements over these floodplains or provide land use restrictions to prevent future buildings from being constructed in these areas.

However, there are several disadvantages to the full build-out concept. The engineering study would be very expensive, in the 2 to 3 million dollar range. The analysis would have to be constantly updated as zoning changes occur, resulting in a new form of stormwater concurrency. The analysis could potentially cause litigation due to property owners having to place easements on their property for a future floodplain. It may take years before new development causes this future floodplain to be realized.

All of these costs could be avoided by volume control regulations.



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**Volume Control Advantage:**

**3. Can actually decrease downstream flooding for some storm events**

Due to the size of the retention pond necessary to meet the volume control requirement for up to the 100-year 24-hour event, most of the smaller and medium sized peak storm events (rainfall up to 5 inches) will be contained entirely within the pond. This means that even the pre-development volume will also be contained in the pond for these rainfall events.

The end result will mean that the nuisance flash flood storms can be contained in the pond which can slowly decrease this type of flooding if enough development sites are permitted with volume control in a particular watershed.

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**Volume Control Advantage:**

- 4. Provides the best water quality treatment of stormwater for protection of our watercourses and lakes**

As previously mentioned, detention with filtration does not provide the pollutant removal necessary to protect our lakes. The best form of stormwater treatment is retention. This is the form of treatment found in volume control type ponds. It is best because the pollutants are kept in the pond and either percolated in the ground or re-used for irrigation purposes.

The Bradfordville Stormwater Study showed that to produce no new loading downstream, retention of 4-inches over the impervious area was needed. Retention was required as the primary method to achieve this goal. The size of the volume control type retention pond would exceed this Bradfordville standard.

Research on comparisons of treatment efficiencies for stormwater management systems showed retention (also referred to as "dry retention") as the best in achieving the maximum pollutant removal efficiencies. (Attachment #3, page 2 of 3, Table 8)

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**Volume Control Advantage:**

- 5. Will save the County costs by not having to perform water quality studies for the remaining drainage basins**

The County spent \$300,000 for the Bradfordville Stormwater Study and is currently underway with another \$250,000 for the Lake Lafayette Water Quality Study. There are several additional drainage basins which may also need studying.

The Bradfordville Stormwater Study produced a no new load standard that would be exceeded by the volume control standard. The volume control standard would exceed any standard resulting from water quality studies. Therefore, additional water quality studies would not be necessary and could save Leon County these costs.

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**Volume Control Advantage:**

**6. In relation to stormwater, makes new development pay for itself**

The Land Use Summary, page I-2, of the Comprehensive Plan, states: "It is the responsibility of every citizen of Leon County to pay his or her fair share first to achieve and then to maintain the community wide adopted levels of service for capital infrastructure and urban services. However, it is not a current resident's responsibility to pay for new developments' fair share costs through subsidization. Thus, in a sense, future development must be self-sufficient."

Volume control would make the developer construct a stormwater pond that retains the excess volume that the new development produces. The pond also contains the new pollutant loading produced by the new development and doesn't allow it to discharge downstream into lakes, wetlands and waterbodies. This for the first time makes development pay for itself in relation to stormwater management for both water quality and flood control.

Current code allows the excess volume to be discharged downstream through rate control. Over the years, this excess volume has scoured and eroded many of the watercourses in the City, altering them to maintained ditches. These ditches scour due to the increased flows sending sediment and turbidity to the downstream lakes. The volume has increased the floodplain elevations to the point where tax dollars are being spent to buy flooded homes and properties. Retrofitting is occurring in areas with water quality problems resulting from developments that either had no stormwater facilities or had inefficient stormwater management systems. All of these retrofit and maintenance costs are being funded by County and City government.

Volume control would prevent further retrofitting in the future for flood control and water quality problems that would relate back to permitting being performed today. Instead of Leon County paying for these retrofit costs in the future, development addresses it today.

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**Volume Control Advantage:**

**7. Simplifies the code with one central stormwater standard**

As mentioned on page 4, there are many different stormwater standards within the Leon County Code. A volume control standard would meet all of these standards except the Lake Jackson 50-year post-development retention standard for all non-single family uses. This would greatly simplify the code.

Last year, the City of Tallahassee adopted the lake protection standards as their primary standard for all areas within the City. This simplified their standards. However, they still have closed basin standards similar to Leon County.

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**Volume Control Advantage:**

8. **Will assist in the implementation of the Total Maximum Daily Load (TMDL) program required by the Federal Government and the Florida Department of Environmental Protection (FDEP)**

TMDL is the maximum amount of a given pollutant that a particular waterbody can assimilate without exceeding surface water standards. The EPA and FDEP is responsible for developing TMDLs for impaired waters. The list of impaired waters includes many surface waters in Leon County, including Lake Jackson, Lake Lafayette, Lake Munson and the Ochlockonee River to name a few. Draft TMDLs have already been proposed for Upper Lake Lafayette and Lake Lafayette Drain.

Pollutant Load Reduction Goals (PLRGs) will be developed to reduce the loading from stormwater to meet water quality standards. A basin management action plan will be developed for each impaired water to meet the PLRGs.

Part of the TMDL implementation will include improvements to existing and proposed stormwater management facilities. FDEP has already targeted conversion of sand filtration to a better form of stormwater treatment as one of the mechanisms to achieve the PLRGs. Adopting volume control regulations that require retention will be a proactive approach in achieving these PLRGs.

Filtration ponds permitted today can contribute to the pollutant loadings that are causing the waters to be impaired. FDEP is beginning to work on a State wide standard that will require some form of stormwater retention. Volume control regulations could be the start of the TMDL implementation program and will also prevent future waters from becoming impaired by permitting actions performed today.

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**Volume Control Advantage:**

**9. Endorsements by Eric Livingston of FDEP and Dr. Harvey Harper of ERD**

Volume Control regulations are supported by two very distinguished individuals in the field of stormwater management. Eric Livingston, P.E., Bureau Chief of the Watershed Management Division of FDEP, supports volume control regulations as a means to maintain and improve water quality in our surface waters. Mr. Livingston recently provided a TMDL workshop to the Board and indicated that these regulations would assist in the implementation phase of the TMDL process. He also informed that FDEP will be working on improving the State standards for stormwater and volume control would meet or exceed that standard.

Dr. Harvey H. Harper, Ph.D., P.E. of Environmental Research & Design (ERD) supports the volume control regulation for purposes of protecting water quality. Dr. Harper performed the Bradfordville Stormwater Study and is currently working on the Lake Lafayette water quality study. He has performed numerous other water quality studies and is also working for both the City of Tallahassee and FDEP.

The storage in a volume control pond would be approximately 50% larger than a Bradfordville (4-inches over the impervious) type retention pond. Therefore, water quality protection would be better and no new pollutant loadings would be released to surface waters.

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**Volume Control Advantage:**

**10. Complies with water policy guidelines proposed by the FDEP**

The FDEP published a notice of proposed rulemaking on August 15, 2003, for Chapter 62-40 F.A.C., the Water Resource Implementation Rule. The proposed rule substantively amends most of this Chapter to incorporate statutory changes enacted in the past six years. A new Section 62-40.431 F.A.C., Stormwater Management Program, is proposed to establish goals to provide guidance for FDEP, Water Management Districts and local government stormwater management programs.

Proposed Section 62-40.431(2)(a) F.A.C. states: "The primary goals of the state's stormwater management program are to maintain, to the maximum extent practical, during and after construction and development, the pre-development stormwater characteristics of a site; to reduce stream channel erosion, pollution, siltation, sedimentation and flooding; to reduce stormwater pollutant loadings discharged to waters to preserve or restore designated uses;.....to enhance groundwater recharge by promoting infiltration of stormwater in areas with appropriate soils and geology....."

Volume control regulations would comply with these proposed goals since the required retention pond would maintain the pre-development characteristics of the site for both water quality and flood control.



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**Volume Control Advantage:**

**11. Prevents costly downstream analyses which may be required during the Environmental Impact Analysis (EIA)**

Section 10-208(15) of the Leon County Code requires sites greater than 2 acres to have a conveyance analysis performed or the stormwater pond must be designed to meet the 2-year pre-development discharge rate. This is required to minimize offsite impacts. This provision would not be required if a volume control pond was required for the site. The underlying assumption is that if the excess volume above the pre-development volume is retained onsite, then the downstream properties would not experience additional flooding.

Due to the cost of the downstream analysis most designers use the 2-year restricted discharge provision which makes the stormwater facility almost as large as a volume control pond. The pond size increases to hold back the discharge to the critical duration two year pre-development discharge rate.

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**Volume Control Advantage:**

**12. Provides aquifer recharge versus discharge downstream**

Current stormwater pond designs with detention and filtration allow all of the stormwater to discharge downstream. Pre-development percolation cannot occur after buildings, pavement and other impervious surfaces are constructed on a site. This reduces the net storage within the aquifer.

Florida is fighting a constant battle with developing and maintaining an adequate water supply for its ever increasing population. In these times of water shortages and water wars, recycling of stormwater can be important in maintaining a water balance within the aquifer. If we keep drawing potable water from the aquifer while sending all of our stormwater downstream to the gulf, eventually our water supply will diminish.

Volume control regulations require that the excess volume produced by the development be retained onsite. This volume will be recovered either by percolation through the pond bottom or irrigation of the landscaping or natural area. Both of these recovery methods will assist in recharging the aquifer instead of discharging the stormwater downstream.

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**Disadvantages of Volume Control Regulations for all of Leon County:**

1. **Additional cost due to the increase in stormwater pond size**
2. **Additional land needed for retention pond**
3. **Difficulty meeting recovery requirements in clay hill areas**
4. **Potential to alter the hydrocycle of wetlands and waterbodies**

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**Volume Control Disadvantage:**

**1. Additional cost due to the increase in stormwater pond size**

*To assist in the explanation below, see Attachment 5.*

The total volume of a stormwater pond which provides either 0.5 inch or 1 1/8 inch of water quality treatment plus 25-year rate control is approximately 2.7 inches to 2.9 inches times the area of the site. Such ponds are the standard for *all open basins in the County for sites less than 2 acres in size with the exception of the Bradfordville Study Area (BSA).*

*In the BSA*, the total volume of a stormwater pond to service a site with 50 percent impervious area would be approximately 3.2 inches times the area of the site. Such a pond would retain the required treatment volume and provide 25-year rate control.

In the County's closed basins, a stormwater pond must provide volume retention to the 100-year, 24-hour storm and 25-year rate control, *the same requirements as herein proposed as a countywide volume control ordinance.* The total volume of such a pond would be 3.65 inches times the area of the site, where 3.2 inches would be for volume retention and the remaining 0.45 inch being needed to attain rate control.

From the above three paragraphs it can be seen that a "volume control" pond will be 1.3 times (3.65 inches / 2.8 inches) as large as a non-BSA pond and 1.14 times (3.65 inches / 3.20 inches) as large as a BSA pond. Therefore, the cost to construct a volume control pond will be slightly larger for excavation costs.

For developments two acres or larger the code requires a downstream analysis or the pond must be constructed so as to restrict the rate of discharge to no greater than the largest rate of discharge occurring during a 2-year storm. This is required to protect against downstream flooding. Most designers opt to use the 2-year restricted discharge because the downstream analysis can be very complicated and expensive. This constriction of discharge rate causes the ponds to get rather large. For ponds providing either 0.5 inch or 1.125 inch of water quality and *2-year discharge restriction*, the total volume is approximately 4.0 inches times the area of the site. Thus if a site requires restriction to the 2-year discharge rate, its pond will actually be larger than a "volume control" pond. The "2-year rate control" pond will be 1.25 times (4.0 inches / 3.2 inches) larger than a "volume control" pond.

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**Volume Control Disadvantage:**

**2. Additional land needed for retention pond**

Since the total volume of "volume retention" ponds will be larger than those not providing volume control, they will in all probability need to occupy a greater portion of the developed site.

On sites with sandy soils (i.e. high percolation rates) where the groundwater table is at a sufficient depth, it will be possible to simply increase the depth of a pond and thereby provide the additional volume for a "volume control" pond. On primarily the south side of town, the sandy soils makes the pond design and construction easier without the additional land requirement.

On sites with clayey soils which have low percolation rates, to enhance the total percolation/recovery rate in accordance with the larger pond volume, it will probably be necessary to increase the footprint (area) of the pond. The negative effect is that a larger "pond" footprint could reduce the percentage of the site that can be used for development purposes.

On clayey soil sites more percolation area will be needed. This might well be accomplished by innovative design, such as installing shallow, flat bottom swales with ditch blocks to convey runoff to the pond, and by allowing a portion of the natural area and landscaped area to be modified so as to assist with stormwater percolation.

The pond area could be significantly increased without reducing the allowable impervious area on the site by allowing a 10 percent credit toward the 25 percent natural or 25 percent landscape area requirements (See the schematic example in Attachment #6). Staff is proposing this credit to offset the impact of a larger pond footprint on the development site. **This solution is very important since the past major stumbling block against volume control regulations has been the additional pond footprint taking up developable area on the site.** This option has been placed in the draft ordinance. This option will not be available to residential subdivisions, since they do not require natural or landscaped areas. Residential subdivisions, however, usually encompass a larger land area than do commercial developments, and since the percentage of impervious area is usually smaller, the pond would occupy a smaller percentage of the land area of the site.

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**Volume Control Disadvantage:**

**3. Difficulty meeting recovery requirements in clay hill areas**

Where the site's soils possess very low infiltration rates, it will be difficult to recover the pond's larger volume as required in the proposed ordinance. In such a situation, the following alternatives can be made available:

- A. Expand the area to be used for volume recovery by allowing modification of a portion of the landscaped or natural areas. The pond area could be significantly increased without reducing the impervious area on the site by allowing a 10 percent credit toward the 25 percent natural or 25 percent landscape area requirements. As previously mentioned, this option has been placed in the draft ordinance.
- B. Irrigate the pervious areas of the site using the water from the stormwater pond. This is how some of the ponds are being designed to meet the Bradfordville standard.
- C. Construct a facility with an even larger volume than that required such that the recovery time can be extended beyond that set forth in the ordinance. To take this alternative, the applicant would have to demonstrate equivalent performance to the code required pond over a 40-year period. Such a provision is similar to an existing pond design alternative included in the Bradfordville Stormwater Standard.
- D. The applicant could apply for a variance to allow a portion of the retained volume to be discharged over a sufficiently long period so as to avoid downstream flooding problems.

It needs to be noted here that there was great concern originally as to whether sites in Bradfordville could be designed to meet the new standard established there. This has now been successfully accomplished a number of times. The Bradfordville retention requirement is 4.0 inches over the impervious area; the "volume control" retention requirement is 6.4 inches times the impervious area, or 1.6 times as much. The required recovery period for a "volume control" pond is 3.2 inches in 7 days (0.46 inches/day) vs. 4.0 inches in 3 days (1.33 inches/day) for a Bradfordville pond. Thus the "volume control" pond will be allowed to recover at approximately one-third of the rate of a Bradfordville pond. This longer allowable recovery time for a "volume control" pond means that will be easier to accomplish pond recovery in the allowable time.

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**Volume Control Disadvantage:**

**4. Potential to alter the hydrocycle of wetlands and waterbodies**

A pond sized to retain the pre-development to post-development volume increase for a 100-year, 24-hour storm will hold back all of the runoff for storms with runoff volumes smaller than this 100-year volume difference. For instance, a commercial development on clayey soils which is 50-percent impervious will, for a 100-year, 24-hour storm, yield 3.2 inches of runoff over and above that which occurs in an undeveloped condition. Thus the development's "volume retention" pond would be sized to completely retain this 3.2 inch volume difference. To get more than 3.2 inches of runoff after development, and thereby cause the pond to discharge, will require a rain storm of 4.8 inches or more. Rain events that are this large, however, occur on the average only about 1.2 times per year. Thus the area immediately downstream of the development could be starved for water with the exception of the very infrequent times when rain events larger than 4.8 inches occur. Wetlands and aquatic systems in close downstream proximity to such a development may not survive under such erratic conditions.

In most situations however, the above shortcoming of too much volume retention should not be a problem. Most of our urban and near urban watersheds and conveyances, due to the lack of adequate (or any) stormwater facilities, suffer the consequences of already having far more water than can be contained. They are much in need of flow reduction and flow stabilization that results from water percolating into the groundwater table. Increased percolation to groundwater is exactly what is accomplished by volume retention.

New development happens piecemeal. In most cases, only a small portion of a watershed is effected by a new development. Thus the unaltered portion of the watershed will continue to provide runoff to the downstream system just as it always has. The summed effect of existing and new development will not modify to any great extent what is already occurring downstream. Thus volume retention will assist in offsetting previous volume increases due to earlier development where such was not practiced.

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### **Summary of Advantages and Disadvantages of a Volume Control Ordinance:**

#### **Advantages:**

1. Prevents downstream flooding from increasing due to new development
2. Prevents having to perform full build-out floodplain analyses
3. Can actually improve downstream flooding for some storm events
4. Provides the best water quality treatment of stormwater for protection of our watercourses and lakes
5. Will save the County costs by not having to perform water quality studies for the remaining drainage basins
6. In relation to stormwater, makes new development pay for itself
7. Simplifies the code with one central stormwater standard
8. Will assist in the implementation of the Total Maximum Daily Load (TMDL) program required by the Federal Government and the Florida Department of Environmental Protection (FDEP)
9. Endorsements by Eric Livingston of FDEP, Dr. Harvey Harper of ERD.
10. Complies with water policy guidelines proposed by the FDEP
11. Prevents costly downstream analyses which may be required during the Environmental Impact Analysis (EIA)
12. Provides aquifer recharge versus discharge downstream

#### **Disadvantages:**

1. Additional cost due to the increase in stormwater pond size
2. Additional land needed for retention pond
3. Difficulty meeting recovery requirements in clay hill areas
4. Potential to alter the hydrocycle of wetlands and waterbodies

In summary, the advantages for volume control far outweigh the disadvantages. Staff has shown that many of the disadvantages can be resolved or mitigated, such as using natural area or landscape area to offset the pond footprint increase. Staff recommends proceeding forward with a volume control ordinance.



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### **Proposed Volume Control Ordinance:**

The draft volume control ordinance is shown in Attachment #7. Newly proposed Sections 10-190 (b) and 10-190 (b)(1) of the Leon County Land Development Code comprise the most important and fundamental modifications to the County's stormwater regulations. These items will establish runoff volume control for up to and including a 100-year, 24 hour storm. Section 10-190 (b) will require the retention of the pre-development to post-development runoff volume increase from a developed site. Section 10-190 (b)(1) requires the recovery of this volume in a timely manner so that the pond's capacity will again be available to capture the volume excess from subsequent storms.

Section 10-190 (b)(4) sets a maximum application rate for irrigation as a means to recover the capacity of a volume control pond. Application rates higher than the allowable 1.5 inches per week usually result, along with natural rainfall, in the total saturation of soils. This will cause water to be discharged from the site rather than be retained as required by Section 10-190 (b).

Section 10-190 (b)(6) is a new proposal that will allow a portion of the site's natural area and landscaped area to be utilized for stormwater purposes, whether it be to construct a larger stormwater pond or to provide percolation areas. This section will allow up to 10 percent of the total area of the site, which would otherwise be in some combination of natural area and landscaped area, to be converted for stormwater purposes.

All of the other provisions of Section 10-190 are essentially carry over items from the existing ordinance, most coming from the provisions added during the implementation of the Bradfordville Stormwater Standard. They deal with very specific pond design standards such as pond slopes, widths of maintenance roads, energy dissipation, trash skimmers, etc.

Section 10-191 (b), dealing with the stormwater treatment standards for "special" areas requiring watershed conservation measures is proposed for deletion from the ordinance. On first appearance, it would appear that these special development zone areas will not, due to this deletion, be protected as well. This, however, is not the case. The newly proposed volume retention requirements set forth in Sections 10-190 (b) and 10-190 (b)(1) exceed by far the water quality standards being deleted. The new volume retention standards call for greater volumes to be retained, and by using retention rather than detention, hold back 100 percent of all pollutants generated from the site.

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## **2. Existing Regulations For Newly Created Lots and Existing Undeveloped Floodplain Lots**

### **Newly Created Lots**

All newly created lots are required to have at least one-half acre of buildable area outside of any regulated sensitive feature, including the 100 year floodplain. (Lots smaller than one-half acre must be entirely buildable) Except for areas where the floodplain rises due to new development upstream, these lots should not present problems with structural flooding in the future.

In order to prevent creation of new flooding problems, all new development must be built above or out of the 100 year floodplain. Current regulations are sufficient to prevent creation of new lots that are entirely flood prone. Construction on existing flood prone lots is protected from structural flooding by requiring construction to be above the 100 year floodplain. A county-wide analysis is necessary to determine the build-out floodplain and a minor EMA change would be necessary. This analysis would not be necessary if volume control was implemented throughout the unincorporated area. To prevent ALL flooding on new lots, even nuisance and "isolation" flooding, a major shift would be needed in regulations to require new lots to be completely outside of floodplains or wetlands. This would dramatically reduce development densities and possibly incur some "takings" liabilities.

### **Existing Undeveloped Floodplain Lots**

All existing lots are allowed to have at least one single-family residence built on them, even if the lot is in a floodplain, or other sensitive feature such as wetlands. Construction on such flood prone lots is limited to only the footprint of the house, which must have a finished floor elevation above the currently identified 100 year flood elevation. Although this creates houses which may have yard flooding, sometimes called "nuisance" flooding, or even at times be totally surrounded by flood waters, known as "isolation" flooding, it is intended to reduce the potential liability from "takings" lawsuits. There are approximately 880 undeveloped flood prone lots existing currently in the unincorporated area. Please note that, ideally, these houses should not flood inside the structure. However, our current regulations are tied to the existing floodplain. In some areas of the County, as upstream development increases, more water will be displaced downstream, raising floodplain elevations and possibly causing additional structural flooding. To eliminate this possibility, we need to either implement volume control regulations or identify the floodplain elevation at buildout of our current allowable zoning.

On existing lots, "isolation" flooding could be prevented by adopting regulations similar to those used at the time of new lot subdivision, that is, prohibiting construction on lots which do not have at least one-half acre of buildable area. Although some lots might need to be purchased as a result, they would be lots that are almost entirely flood prone and would have a relatively low cost. It may be cheaper in the long run to purchase such lots to retain their flood control benefits than it is to replace that flood control with a capital project later. An analysis was performed using our GIS

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system to determine an estimate of the total number of developed and vacant lots within the floodplain by size. This analysis is shown on Attachment #8.

If the Board desires to prevent all flooding on existing lots, including yard flooding, then regulations would need to be created to prohibit construction on all existing lots that contain any amount of floodplain or wetlands. This could expose the County to considerable financial liability through "takings" lawsuits and would require changes in the EMA and Comprehensive Plan.

The only regulatory way to keep existing flooding situations from getting worse is to stop development or expand stormwater regulations to include full volume control countywide, even outside of closed basins.

### **3. Flood Protection Ordinance Amendment Consideration:**

The increasing cost of damages due to flooding of residential and commercial structures has resulted in staff revisiting the provisions of the Leon County Flood Protection Ordinance. Pursuant to this analysis and based upon the experience of County environmental permitting staff in dealing with flood protection issues, several modifications are recommended to enhance and improve the ordinance with the objective of reducing the inconvenience and economic losses associated with flood damage.

#### **Raising Required Finished Floor Elevations:**

The most pressing need is to appropriately raise the required lowest finished floor elevations of newly constructed structures beyond that presently required. The proposed changes to the ordinance in Attachment #9 call for higher finished floor elevations based on three principals.

The first principal is that the lowest finished floor elevations of structures should be raised above the 100-year (base flood) elevation by an amount that is directly related to the degree of uncertainty of the established 100-year flood elevation and to the likelihood that the 100-year flood elevation will increase due to build out of the upstream drainage basin.

There are essentially three classes of 100-year flood elevations. The first class of 100-year flood elevations includes those where no flood elevation has been established and can not be established with great accuracy due to the lack of essential engineering data. In this case, to establish a safe lowest finished floor elevation, a best effort is made to establish a reasonable flood elevation. Then, in order to assure a reasonably safe finished floor elevation, the flood protection elevation will now be required to be set at three feet higher than this flood elevation. The existing regulation requires this increment to only be 2.0 feet above this class of flood elevation. The new procedure is implemented via the **item (1) definition of flood protection elevation in Section 10-1, and by Section 10-1722** in the newly proposed ordinance.

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The second and most common class of 100-year flood elevations consists of those where the flood elevation has been determined based on existing conditions of development. Such 100-year flood elevations are susceptible to having to be increased each time (approximately once every 10 years) new Flood Insurance Rate Maps (FIRMs) are published. This is because, in rapidly developing areas, there is an increasing amount of impervious area and stream channelization being added to watersheds, which results in ever greater 100-year flood elevations. To account for the possibility of an increasing flood elevation over time, **item (2) of the flood protection elevation definition in Section 10-1** proposes adding three feet to the 100-year flood elevation to assure a safe flood protection elevation. Implementation is effected by **proposed Section 10-1722 (1) and (2)**. The existing ordinance required height-increment is only 1.0 foot above this flood elevation.

A third and most accurate class of flood elevations is those where the 100-year flood has been determined by an engineering study that assumed a fully built out drainage basin. Such flood elevations are in all probability accurate and they are not likely to change over time. For such cases, the flood protection elevation will now be established as 1.5 feet above the 100-year flood elevation as proposed in **item 3 of the definition in Section 10-1 and Section 10-1722 (1) and (2)**. The existing safety height-increment is only 1.0 foot above this flood elevation.

The second principal is to provide the same level of flood protection to structures constructed on lots that are only slightly higher than the 100-year flood elevation (i.e. not in a flood zone) as is provided to those structures located on lots that are below the 100-year flood elevation (i.e. are in a flood zone).

Currently, structures that are constructed on lots that flood in part or in entirety must have finished floor elevations at or above the flood protection elevation (100-year flood elevation plus a safety increment). Structures that are constructed on lots that are only slightly higher than the 100-year flood elevation are usually not required to build off grade. Thus a structure constructed in a flood zone may be adequately protected while a structure on an immediately adjacent parcel may not be protected to the same degree. Clearly, structures at some risk to flooding, no matter their location, should be protected to the same degree. This equality of protection from flooding can now be assured by the "in or adjacent to a drainage area that is subject to flooding" which is proposed in the definition of flood protection elevation in **Section 10-1** and by the proposed "within or in close proximity" clauses in **Section 10-1736 (c)**.

The third principal is that the lowest finished floor elevations of structures, whether in or out of an area that floods, should be raised sufficiently to prevent damages due to sheet flow from uphill areas. The current flood protection ordinance provides no such protection. **Item (4) of the newly proposed flood protection elevation definition in Section 10-1 and the implementation clause in Section 10-1736 (j)** remedy this deficiency. This new language requires that finished floor elevations be at least one foot above the highest finished grade elevation adjacent to a new structure.

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**Protecting Garages and Basements from Overland Sheetflow:**

The existing flood protection ordinance does not preclude garages from being constructed below the 100-year flood elevation. Likewise, basements are not precluded from being constructed below the finished grades immediately adjacent to a structure. For both garages and basements, there are no existing ordinance provisions that require adjacent grading to be accomplished in such a manner so as to reduce the risk of flood damages from overland sheetflow.

This gap in the existing ordinance regularly results in widespread flood damages and complaints due to overland sheet flow into garages and basements. In order to prevent or reduce such flood damages, provisions have been added in this amendment to require grading adjacent to structures that will result in better drainage away from a structure. Proposed **Section 10-1736 (k)** will require that a "site be graded to prevent overland sheet flow from entering in to garages and basements".

**Revisions to Section 10-1701:**

The proposed revisions to section 10-1701 are based on recommendations from the county attorney's office. They cite the federal enabling language from which the entire floodplain management regulations are based. It is also recommended that Section 10-1701 carry the provision that the County Administrator or his/her designee may administer and enforce the provisions of the flood control ordinance.

**Modifications to Regulatory Elevations in the Lake Iamonia Special Development Zone:**

Due to the proposed amendment to the flood protection elevation definition in Section 10-1 (1) which calls for the flood protection elevation to be "three feet above the highest anticipated or historically recorded elevation of surface water", the Iamonia Special Development Zone elevations need to be updated. Accordingly, **Section 10-192 (e)** changes the former regulatory elevation from 109 feet to 110 feet NGVD (National Geodetic Vertical Datum).

Based on the above, staff recommends moving forward with the ordinance in Attachment #9 to enhance and improve the ordinance with the objective of reducing the inconvenience and economic losses associated with flood damage.

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**Options:**

1. Direct staff to obtain comments from the GEM Citizens User Group, Science Advisory Committee and Water Resources Committee for the volume control ordinance in Attachment #7, and bring back to the Board a request for consistency review by the Planning Commission and a request to schedule two public hearings.
2. Do not direct staff to obtain comments from the GEM Citizens User Group, Science Advisory Committee and Water Resources Committee for the volume control ordinance in Attachment #7, and bring back to the Board a request for consistency review by the Planning Commission and a request to schedule two public hearings.
3. Direct staff to obtain comments from the GEM Citizens User Group, Science Advisory Committee and Water Resources Committee for the amendments to the flood protection ordinance in Attachment #9, and bring back to the Board a request for consistency review by the Planning Commission and a request to schedule two public hearings.
4. Do not direct staff to obtain comments from the GEM Citizens User Group, Science Advisory Committee and Water Resources Committee for the amendments to the flood protection ordinance in Attachment #9, and bring back to the Board a request for consistency review by the Planning Commission and a request to schedule two public hearings.
5. Board direction

**Recommendation:**

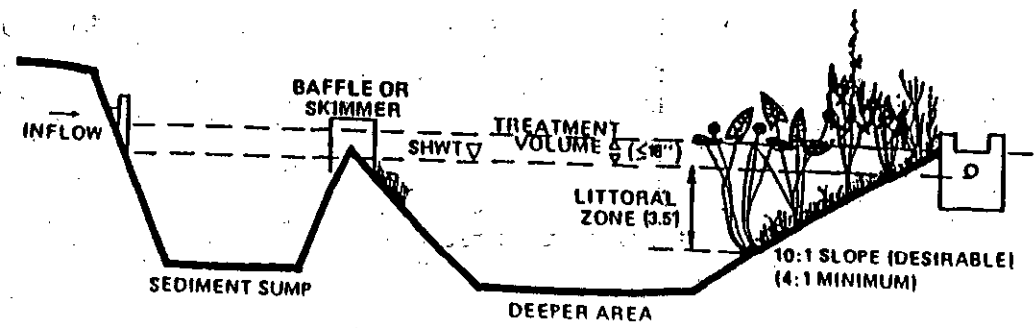
Options #1 and #3

**Attachments:**

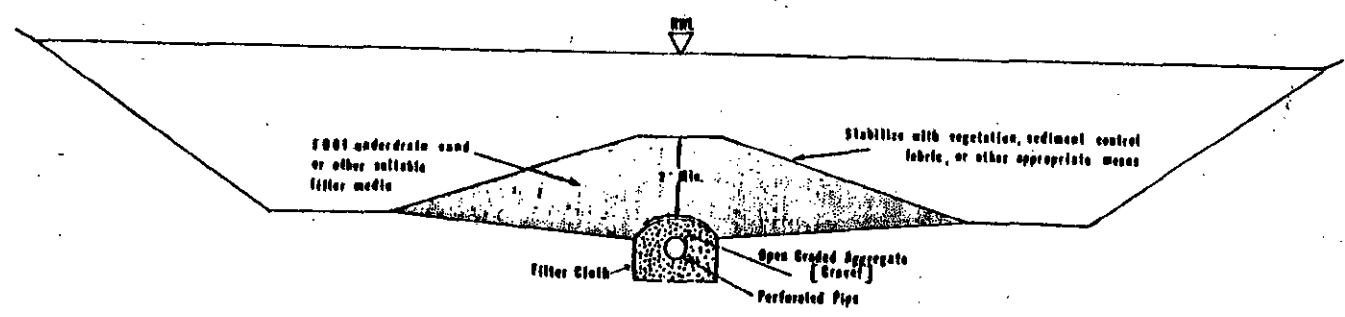
1. Stormwater Pond Types
2. Off-Line Treatment System
3. Pollution Removal Efficiencies For Typical Stormwater Management Systems in Florida
4. Closed Drainage Basins of Leon County
5. Total Volumes of Stormwater Ponds
6. Example of 10% Credit Toward Natural and Landscape Area Requirements
7. Draft Volume Control Ordinance
8. Lots Affected by Floodplain
9. Draft Amendments to the Flood Protection Ordinance

# STORMWATER POND TYPES

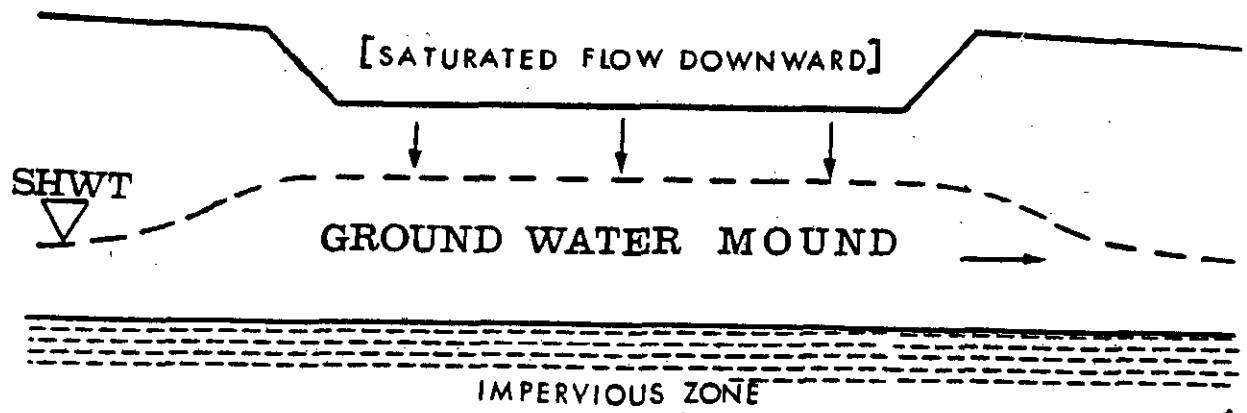
## WET DETENTION



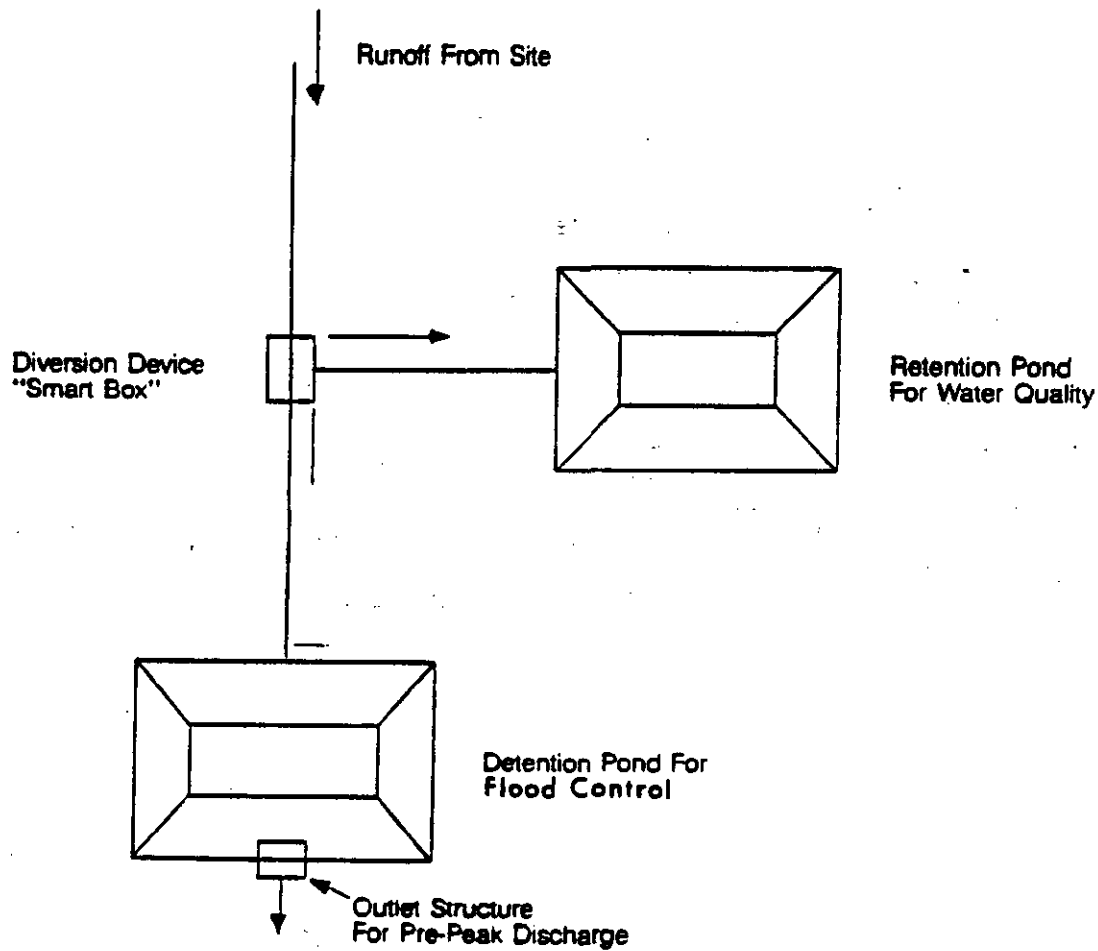
## SAND FILTRATION



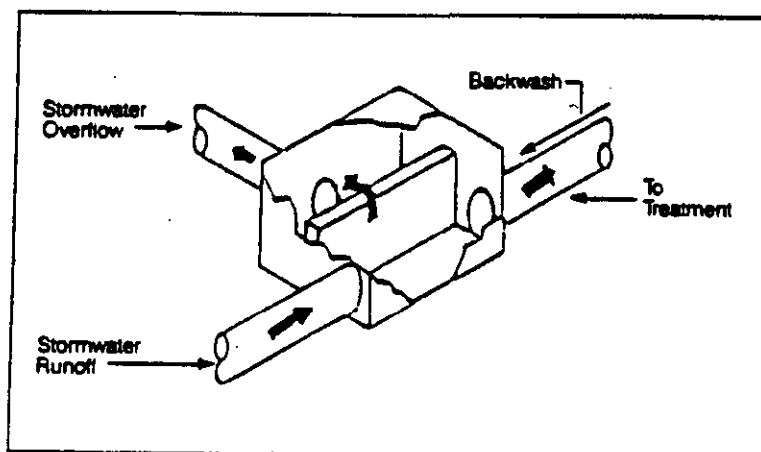
## RETENTION WITH PERCOLATION



## Off-Line Treatment System



### "Smart" Box Schematic





# **POLLUTANT REMOVAL EFFICIENCIES FOR TYPICAL STORMWATER MANAGEMENT SYSTEMS IN FLORIDA**

Presented at the  
Fourth Biennial Stormwater Research Conference  
Clearwater, FL

October 18-20, 1995

Sponsored By:

The Southwest Florida Water Management District

Prepared By:

**Environmental Research & Design, Inc.**  
3419 Trentwood Blvd., Suite 102  
Orlando, FL 32812

Harvey H. Harper, Ph.D., P.E.

### Comparison of Treatment Efficiencies for Stormwater Management Systems

A comparison of treatment efficiencies for typical stormwater management systems used in the State of Florida is given in Table 8 based on information obtained in the literature review. In cases where a range of removal efficiencies are presented in technical reports related to a particular stormwater management technique, the mid-point of the range is given in Table 8 for comparison purposes.

The Florida State Water Policy, outlined in Chapter 17-40 of the Florida Administrative Code, establishes a goal of 80% annual reduction of stormwater pollutant loadings by stormwater management systems. Of the stormwater management systems listed in Table 8, only dry retention systems, with 0.5-inch of runoff retained, meet the State Water Policy goal of 80% reduction in annual pollutant loadings to the system. Off-line retention/detention facilities meet the 80% reduction goal for total phosphorus, TSS, BOD and total zinc, but provide only a 60-75% annual pollutant reduction for total nitrogen, copper and lead. Wet detention systems can meet the 80% reduction goal for TSS only, with removal efficiencies from 40-50% for total nitrogen, total phosphorus and BOD. Dry detention with filtration systems meet the 80% reduction goal for total lead only and provide virtually no pollutant removal for total nitrogen, total phosphorus and BOD. Based on the available literature, dry detention with filtration systems were found to exhibit a high degree of variability in estimated removal efficiencies. The actual removal efficiencies achieved by dry detention with filtration systems are a function of the relationship between the underdrain system and the seasonal high groundwater table.

**TABLE 8**  
**COMPARISON OF TREATMENT EFFICIENCIES**  
**FOR TYPICAL STORMWATER MANAGEMENT**  
**SYSTEMS USED IN FLORIDA**

TYPE OF SYSTEM	ESTIMATED REMOVAL EFFICIENCIES (%)						
	TOTAL N	TOTAL P	TSS	BOD	TOTAL Cu	TOTAL Pb	TOTAL Zn
Dry Retention							
a. 0.25-inch retention	-60	-60	-60	-60	-60	-60	-60
b. 0.50-inch retention	-80	-80	-80	-80	-80	-80	-80
c. 0.75-inch retention	-90	-90	-90	-90	-90	-90	-90
d. 1.00-inch retention	-95	-95	-95	-95	-95	-95	-95
e. 1.25-inch retention	-98	-98	-98	-98	-98	-98	-98
Off-Line Retention/Detention	-60	-85	-90	-80	-65	-75	-85
Wet Retention	-40	-50	-85	-40	-25	-50	-70
Wet Detention	-25	-65	-85	-55	-60	-75	-85
Wet Detention with Filtration	0	-60	-98	-99	-35	-70	-90
Dry Detention	-15	-25	-70	-40	-35	-60	-70
Dry Detention with Filtration	0	0	-75	0	-65	-90	-25
Alum Treatment	-50	-90	-90	-75	-80	-90	-80

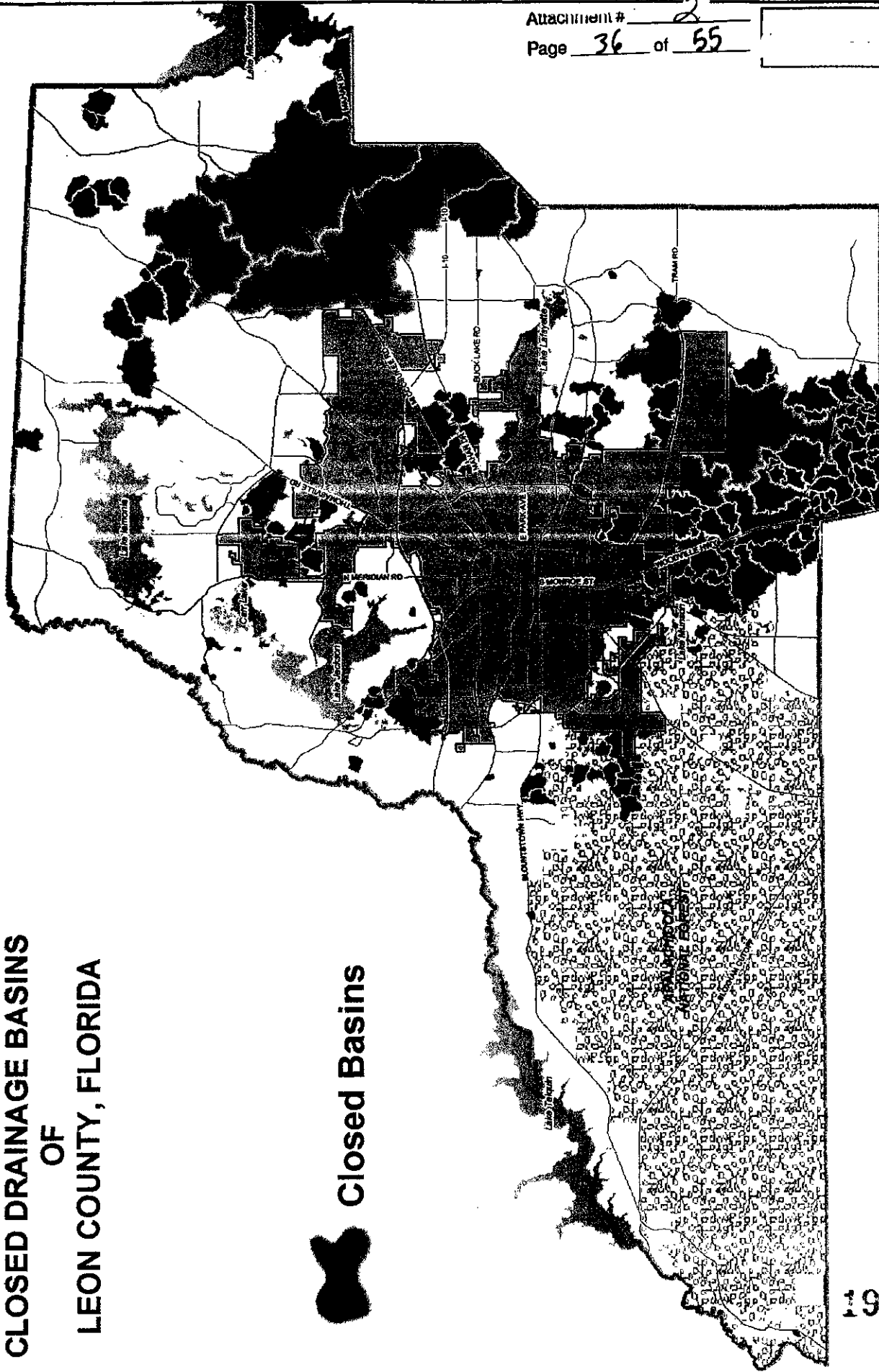
19

Based on the information provided in Table 8, the most effective stormwater management systems in terms of retaining stormwater pollutants appear to be dry retention, off-line retention/detention ponds, wet retention, and wet detention systems. The use of these types of systems should be emphasized to maximize the pollutant removal effectiveness for stormwater management systems.

Based upon the literature review, there is little evidence to indicate that filter systems improve the operational performance of stormwater management systems. In fact, much of the research indicates that filter systems may actually degrade the pollutant removal effectiveness of either a wet detention or dry detention system. In addition, filter systems must be routinely maintained to continue the proper hydraulic performance of the system. In view of the poor pollutant removal effectiveness of filter systems, and the continuing maintenance problems associated with these systems, the use of filter systems with wet detention or dry detention ponds should be discouraged.

# CLOSED DRAINAGE BASINS OF LEON COUNTY, FLORIDA

 Closed Basins



Attachment # 2  
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5 Miles



Major Roads  
Major Lakes  
Tallahassee City Limit  
Apalachicola National Forest  
Leon County Boundary

Map Requested By: Staff  
Project: BCC Work Shop "Stormwater Regulations"  
Date: October 20, 2003  
Path: I:\MAPPING\Cherry\_river\cherryview Reg\Closed Basin Theme1.mxd

Leon County Office of Grants & Environmental Management  
Administrative Support Services, CHMT Facilities



Tallahassee, FL 32301  
E-Mail: cems@leon.fl.us or Phone: 904-488-7300 Ext. 155  
GIS Web site: www.leonpermits.org  
GIS Website: www.digi.org

Note: this product has been compiled from the most accurate source data from Leon County and the City of Tallahassee. However, this product is for reference purposes only and is not to be construed as a legal document or survey instrument. Any reliance on the information contained herein is at the user's own risk. Leon County and the City of Tallahassee do not warrant the accuracy of the information contained herein or any other resulting therefrom. In addition, the Leon County Property Appraiser's office assumes no responsibility for any data errors represented herein.

**Total Volumes of Stormwater Ponds  
That Comply with Various Water Quality and Rate Control Provisions**

**Pond Volumes Associated with These Provisions for a  
one acre site (inches over the site / total cubic feet)**

<u>Ordinance Provisions Met</u>	<u>Water Quality</u>	<u>Rate Control</u>	<u>Total</u>
0.5" WQ + 25-Yr. Rate Control	0.50 / 1,815	2.20 / 7,985	2.70 / 9,800
0.5" WQ + 2-Yr. Rate Control	0.50 / 1,815	3.46 / 12,560	3.96 / 14,375
1.125" WQ + 25-Year Rate Control (Lake Protection)	1.125 / 4,084	1.735 / 6,298	2.86 / 10,382
1.125" WQ + 2-Yr. Rate Control (Lake Protection)	1.125 / 4,084	2.835 / 10,291	3.96 / 14,375
4.0" WQ + 25-Yr. Rate Control (The Bradfordville 4-Inch Standard)	2.00 / 7,260	1.20 / 4,356	3.20 / 11,616
6.4" Volume Control + 25-Yr. Rate control	3.20 / 11,616	0.45 / 1,634	3.65 / 13,250

All of the values above are for stormwater facilities serving a 1.0 acre site developed to possess 50 percent impervious area with a post-developed pervious area CN of 66 - which has been constructed on an undeveloped site with an original CN of 60.

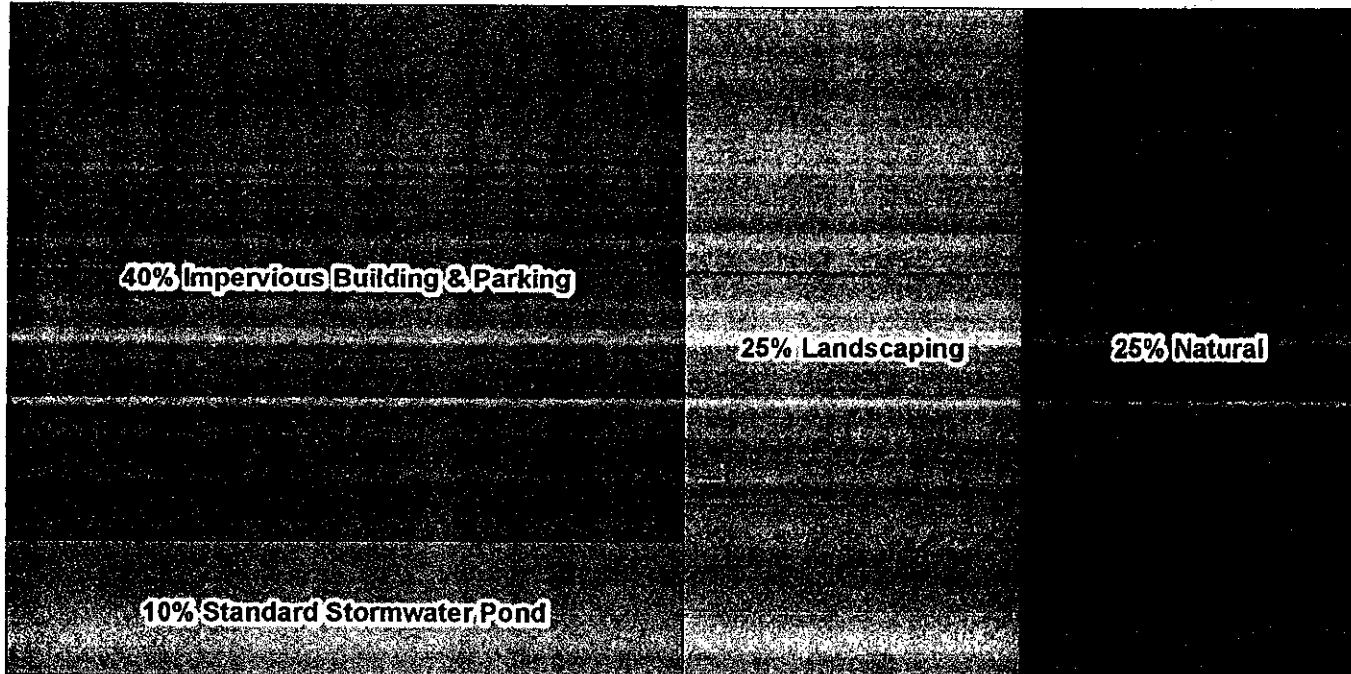
Attachment 2  
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# Example of 10% Credit toward Natural and Landscape Area Requirements

## SITE A

Typical Site Layout

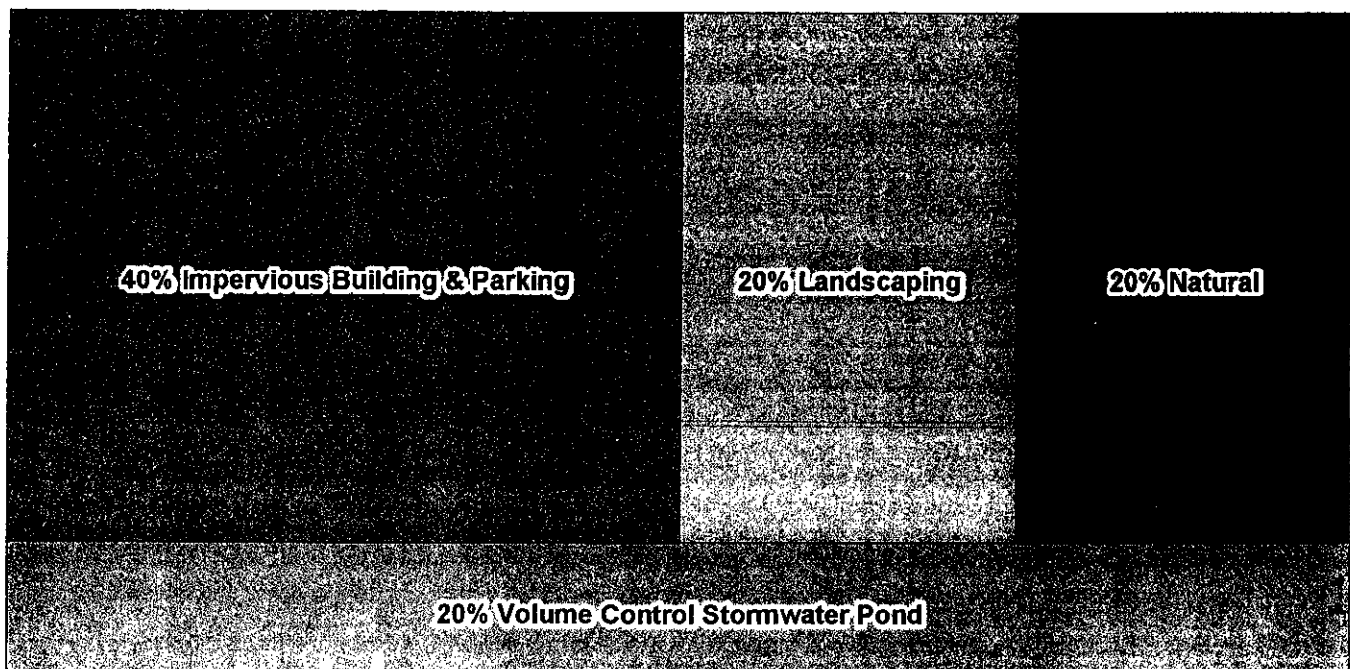
- 40% - Impervious Building & Parking
- 10% - Standard Stormwater Pond
- 25% - Landscaping
- 25% - Natural



## SITE B

Modified Site Layout with 10% allowance toward natural and or landscape area for a volume control pond.

- 40% - Impervious Building & Parking
- 20% - Volume Control Stormwater Pond
- 20% - Landscaping
- 20% - Natural



Last Revision: 10/19/03

ORDINANCE NO. 03-\_\_

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF LEON COUNTY, FLORIDA, AMENDING CHAPTER 10, LAND DEVELOPMENT CODE, OF THE LEON COUNTY CODE OF LAWS RELATING TO THE ENVIRONMENTAL MANAGEMENT ACT (EMA); AMENDING SECTION 10-190, WATER QUALITY TREATMENT; AMENDING SECTION 10-191, WATERSHED CONSERVATION MEASURES; PROVIDING FOR CONFLICTS; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF LEON COUNTY, FLORIDA, that:

**Section 1.** Section 10-190 of Chapter 10 of the Code of Laws of Leon County, Florida, is hereby amended as follows:

**Sec. 10-190. Water quality treatment.**

(a) Water quality treatment shall be provided as a part of all development activity which requires a stormwater application under this article. At a minimum, treated stormwater shall meet the applicable water quality standards set forth in F.A.C. chs. 62-4, 62-302, 62-520, 62-522, 62-550 and 62-25, and in this division. Design and performance standards set forth in such F.A.C. chapters are hereby adopted and incorporated in this article by reference. However, design and performance standards more stringent than those specified therein may be required whenever discharge from a site does not meet state water quality standards, and may also be required for specific watersheds for which the for purposes of preserving water quality as adopted by the Board of County Commissioners has adopted, or shall adopt, conservation measures.

(b) Volume control is required. Runoff volumes in excess of the pre-development runoff volume shall be retained for all storm events up to a 100-year, 24-hour duration storm, except that the excess volume may be discharged from individual sites to an approved regional retention facility as may be allowed pursuant to section 10-189.

(1) Drawdown requirements:

a. One-half the required pond volume shall be recovered within 7 days, and the full volume shall be recovered within 30 days.

b. Regardless of the method of volume recovery, the entire retention volume must recover within the time frame established above unless an approved continuous analysis, using Tallahassee Airport rainfall data from January 1,

1959 to December 31, 1998, demonstrates that the total volume retained within the stormwater system over the forty year period is greater than or equal to that retained by a dry retention system as set forth in subsection (b) based on the above described recovery times.

(2) For calculating the treatment volume required for pervious pavements and graveled areas, initially such surfaces shall be assumed to be 100 percent impervious, then deductions in the required treatment volume for such areas can be taken that is equivalent to:

- a. The porosity of the pavement material times the thickness of the paving material times a safety factor of 0.5.
- b. If, and only if, the soils immediately underlying the pavement for a depth of 18 inches have a permeability of 3 inches per hour or greater, as demonstrated by onsite percolation tests, then a further deduction can be taken equivalent to the porosity of the soil strata times 4 inches times a safety factor of 0.5.

The above deductions will be allowed provided that the applicant specifically commits, in his Stormwater Operating Permit, to regularly sweep/vacuum the area covered with pervious pavement and to verify the pavement's percolation capacity when the Operating Permit is renewed.

(3) Where volume recovery is to be by percolation, groundwater mounding calculations to demonstrate recovery of the retention volume pursuant to the requirements set forth in subsection (1) above shall be required unless the applicant conclusively demonstrates by other engineering methods that pond recovery will not be adversely affected by an elevated groundwater table. If the bottoms of all retention areas intended to percolate stormwater are shown by soil borings to be less than 3 feet above the historical wet-season high water table, a mounding analysis shall be required.

(4) Where volume recovery is to be by irrigation, the rate of land application shall not exceed 1.5 inches per week unless the applicant can conclusively demonstrate that the on-site soil conditions and vegetation warrant a higher application rate. Under no circumstances shall irrigation water be allowed to discharge from the irrigation site.

(5) Facility design standards.

- a. Facility Configuration: All on-line facilities shall have a flow-path-length to flow-path-width ratio of 2:1 or greater. The inlets and outlets shall be on



1 opposite ends of the facility. If this is not possible, the effective flow length  
2 shall be increased by adding diversion barriers within the facility as necessary  
3 to provide this minimum flow length.

4  
5 b. Retention ponds/areas shall have 4H:1 V maximum side slopes on a sufficient  
6 length of the perimeter to allow adequate maintenance access to the bottom  
7 of the facility. If any of the side slopes are steeper than this, a security fence  
8 shall be placed completely around the perimeter of the facility and located  
9 exterior to the maintenance access ways. The fence shall not be required if  
10 the pond depth is less than 18 inches.

11  
12 c. Retention facilities shall have flat bottoms in order to maximize the surface  
13 area for percolation.

14  
15 d. Maintenance access requirements:

16  
17 1. For every facility, the owner or developer shall provide, at a  
18 minimum, a 15 foot wide clear and stable access to the facility from  
19 the nearest "public" right-of-way or road. Such access shall be  
20 evidenced by a recorded reservation or grant of an easement, which  
21 shall run with the land, to the benefit of the County.

22  
23 2. For retention facilities with an overall depth greater than 18 inches,  
24 provide, at a minimum, a 15 foot wide clear, level and stable access  
25 around a sufficient portion of the perimeter of the facility, that is  
26 inside of any fences and external to the top-of-bank of the facility, to  
27 allow adequate maintenance from dry land. For retention facilities  
28 with an overall depth of 18 inches or less, provided the facility has  
29 side slopes of 4 horizontal to 1 vertical (or less) on at least one side  
30 of the facility, the applicant can provide the above access on the  
31 sloped side of the facility only. Any access required by the provisions  
32 of this subsection shall be evidenced by a recorded reservation or  
33 grant of an easement, which shall run with the land, to the benefit of  
34 the County.

35  
36 3. The minimum inside radiuses of all access ways shall be 20 feet.

37  
38 4. Adequate access for both personnel and mechanized equipment shall  
39 be provided to all inlet and outlet structures.

40  
41 5. If Leon County is proposed to be the maintenance entity for any  
42 stormwater management facility permitted under this section, either

1 by dedication, or by reservation of an easement, or by any other  
2 process, the applicant shall submit the engineering design for the  
3 facility directly to the Leon County Department of Public Works for  
4 its review and approval as to the adequacy of maintenance access to  
5 the facilities. An environmental permit shall not be issued until the  
6 applicant demonstrates, in writing, the approval of the Department of  
7 Public Works.

8  
9 e. Skimmer/trash rack requirements

- 10  
11 1. Trash/leaf traps with easy maintenance access shall be provided at  
12 key inlets and all outlets from a facility unless the applicant can  
13 conclusively demonstrate that this is not possible.  
14  
15 2. All outlet structures shall have an oil skimmer that extends above and  
16 below any outlet structure opening.

17  
18 f. Energy dissipation requirements

- 19  
20 1. Energy dissipation devices sufficient to prevent erosion and  
21 resuspension of loose sediments shall be placed on all inlets to  
22 retention facilities.  
23  
24 2. Energy dissipation devices sufficient to prevent downstream channel  
25 erosion shall be placed at the outlets of all retention facilities.

26  
27 g. Stabilization of stormwater treatment facilities:

28  
29 All berms and side slopes shall be stabilized with pinned sod. Pond bottoms  
30 can be seeded and mulched. Restabilization by the contractor or owner shall  
31 be necessary until such time that the sod is fully rooted and otherwise well  
32 established.

33  
34 h. Rate control in Section 10-208(1) is required after the water quality treatment  
35 within this section is fully satisfied prior to any overflow/discharge from the  
36 facility. The conveyance analysis and restricted discharge requirements in  
37 Section 10-208(15) will not be required if the stormwater management  
38 facility is designed in accordance with this section.

- 39  
40 (6) It shall be presumed that a volume control stormwater management facility will  
41 require no more than 10 percent of the total area of the development site. If,  
42 however, the applicant can demonstrate with engineering calculations that this area

is insufficient to achieve compliance with volume control provisions within this section, a portion of the site's required natural and/or landscape area may be converted for stormwater management uses. Only the additional area demonstrated as being necessary to achieve full compliance with volume control provisions, but in no case more than an additional 10 percent of the total area of the site, may be converted from any combination of the 25% landscape area requirements in Section 10-257 and the 25% natural area requirements in Section 10-258. Any reduction toward the natural area requirement can only occur if the natural area does not contain a conservation or preservation area identified in Section 10-346.

(Ord. No. 92-3, § 1(7-15), 1-28-92)

**Section 2.** Section 10-191 of Chapter 10 of the Code of Laws of Leon County, Florida, is hereby amended as follows:

**Sec. 10-191. Watershed conservation measures.**

(a) Conservation measures designated. The Board of County Commissioners hereby adopts the following conservation measures to be applied in the Lake Jackson, Bradford Brook Chain-of-Lakes, Fred George, Lake McBride, Lake Calayette, and Lake Iamonia watersheds for the protection of water quality, fish, wildlife, and the aquatic ecosystem of those drainage basins. The Board of County Commissioners may adopt additional conservation measures to provide such protection for other receiving water bodies and associated surface water drainage basins in the county.

(b) Stormwater treatment. The following are minimum acceptable methods for stormwater treatment; provided that the discharges meet state water quality criterion. More stringent treatment methods may be required by the director if discharges fail to meet state water quality standards:

	Method	Treated Volume
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1

(1)	Wet detention	Wet detention treatment volume shall be, at a minimum, the runoff from the first three inches of rainfall, or as an option for sites with drainage areas less than 100 acres, the first 1 1/2 inches of runoff. The top one-half of the treatment volume must be discharged in 60 hours. Subsequently, the bottom one-half of the treatment volume must be discharged in 60 hours or more.
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2

(2)	Off-line retention	Off-line retention treatment volume shall be provided equal to 50 percent of the runoff from the first 3.0 inches of rainfall, or as an option for sites with drainage areas less than 100 acres, the first 3/4 inch of runoff. The full treatment volume shall again be available within 72 hours following a storm event, with appropriate on-site soils tests submitted to verify the infiltration rate.
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(3)	On-line retention or underdrained filtration	For on-line retention or detention with underdrained filtration, treatment volume shall be provided equal to 75 percent of the runoff from the first 2.6 inches of rainfall, or as an option for sites with drainage areas less than 100 acres, the first 1.0 inches of runoff. For the filtration option, only bottom underdrain systems planted with grass that are capable of recovering the treatment volume within 36 hours shall be allowed, unless an alternative system is shown by the applicant, to the satisfaction of the director, to exceed the capabilities of such a bottom underdrain system.
(4)	Swales	Swale treatment volume shall be percolation of 80 percent of runoff from a three-year one-hour (2.6 inches) storm event. Calculations demonstrating percolation of this volume within the swale within 72 hours shall be submitted with the permit application.

The drainage area for determining treatment volumes shall include all areas draining to the facility (on-site and off-site).

(c) ~~Special site constraints.~~ If site constraints require another method of water quality treatment, such other method may be approved by the director if such method provides a level of

treatment equivalent to off-line retention as specified in subsection (b)(2), and is specifically authorized by the State Department of Environmental Protection.

(d)(b) *Best management practices.* The following best management practices, at a minimum, shall be required in conjunction with all new development and redevelopment, and shall be adhered to by all property owners, located within the Lake Jackson, Bradford Brook Chain-of-Lakes, Fred George, Lake McBride, Lake Lafayette and Lake Iamonia special development zone. All site and development plans submitted for approval shall specifically include the requirement of compliance with these best management practices. The best management practices shall be specifically set forth within, and made a part of, the restrictive covenants for all subdivisions approved by the local government and such restrictive covenants shall be recorded with the plat. All environmental management permits issued for development activities within the Lake Jackson, Bradford Brook Chain-of-Lakes, Fred George, Lake McBride, Lake Lafayette or Lake Iamonia special development zone shall include the requirement of compliance with these best management practices as a condition of such permit:

- (1) Buffering, which may include vegetated berms along the lower contours of lots, so as to provide or improve wildlife habitat and to improve water quality. Berms or buffers shall be vegetated with natural indigenous vegetation suitable for soil and hydrology of the site.
- (2) Restricted use of pesticides, herbicides and fertilizers to those materials which have rapid decomposition characteristics, are labeled for aquatic use, and are used at the lowest possible label rates. Fertilizer constituents should have at least 50 percent slow release characteristics, be applied at the lowest labeled rate per application, be a non-phosphorous or low phosphorous analysis, and be formulated for good slope retention characteristics.
- (3) Preservation of vegetation of natural wetlands, floodways and watercourses.
- (4) Use of native, low-fertilization, and low-maintenance vegetation.
- (5) Regular maintenance and upgrading, as necessary, of septic tanks and approved discharges from washing machines and garbage disposals.
- (6) Soil conservation service approved conservation practices, including erosion and sediment control and water quality practices for all agricultural operations.

(Ord. No. 92-3, § 1(7-16), 1-28-92; Ord. No. 95-14, § 7, 9-12-95)

1 **Section 3. Conflicts**

2  
3 All ordinances or parts of ordinances in conflict with the provisions of the Ordinance are hereby  
4 repealed to the extent of such conflict, as of the effective date of this Ordinance, except to the extent  
5 of any conflicts with the Tallahassee-Leon County Comprehensive Plan, as amended, which  
6 provisions shall prevail over any parts of this Ordinance which are inconsistent, either in whole or  
7 in part, with the Comprehensive Plan.  
8  
9

10 **Section 4. Severability**

11  
12 If any section, subsection, sentence, clause or phrase of this Ordinance is, for any reason, held to be  
13 invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a  
14 separate, distinct and independent provision and, such holding shall not affect the validity of the  
15 remaining portions of this Ordinance.  
16  
17

18 **Section 5. Effective Date**

19  
20 This ordinance shall have effect upon becoming law.  
21  
22

23 DULY PASSED AND ADOPTED BY the Board of County Commissioners of Leon County,  
24 Florida, this \_\_\_\_ of \_\_\_\_.

25  
26  
27 LEON COUNTY, FLORIDA

28  
29 BY: \_\_\_\_\_  
30 TONY GRIPPA, CHAIRMAN  
31 BOARD OF COUNTY COMMISSIONERS  
32

33  
34 WITTEST:  
35 BOB INZER, CLERK OF THE COURT  
36 LEON COUNTY, FLORIDA  
37

38 APPROVED AS TO FORM:  
39 LEON COUNTY ATTORNEY'S OFFICE

BY: \_\_\_\_\_

BY: \_\_\_\_\_  
HERBERT W.A. THIELE, ESQ.  
COUNTY ATTORNEY

### Lots Affected by Floodplain

Description	Total Developed and Undeveloped Lots	Vacant Lots	Vacant Lots >10 acres	Vacant Lots 2-10 acres	Vacant Lots .5-2 acres	Vacant Lots <.5 acres
Lots affected by Floodplain	7040	2576	802	782	703	289
At least ½ acre of buildable area	4073	1697	753	602	342	
Does not have ½ acre of buildable area outside floodplain	2967	879 \$15,711,667*	49 \$4,040,187*	180 \$3,115,624*	361 \$5,439,851*	
Entirely within floodplain	1042	488 \$8,543,412*	46 \$3,888,691*	124 \$2,096,803*	166 \$1,635,806*	152 \$922,112*

\*Property Appraiser Assessed Value



Last Revision: 09/17/03

ORDINANCE NO. 03-\_\_

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF LEON COUNTY, FLORIDA, AMENDING SECTION 10-1, DEFINITIONS; SECTION 10-192, SPECIAL DEVELOPMENT STANDARDS FOR ENVIRONMENTALLY SENSITIVE ZONES; SECTION 10-1701, SHORT TITLE; SECTION 10-1722, CERTIFICATIONS FOR CERTAIN CONSTRUCTION; SECTION 10-1736, GENERALLY; FOR MODIFICATIONS TO FLOOD PROTECTION AND FLOOD DEVELOPMENT STANDARDS; PROVIDING FOR CONFLICTS; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF LEON COUNTY, FLORIDA, that:

**Section 1.** Portions of Section 10-1 of the Code of Laws of Leon County, Florida, are hereby amended as follows:

Sec. 10-1. Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning.

Flood protection elevation shall mean an elevation determined by standard engineering practices which is the higher of either item (1), (2), or (3) where a parcel is located in or adjacent to a drainage area subject to flooding, and, for all parcels regardless of their location, item (4) as set forth below:

(1) where no base flood elevation has been determined by an engineering study or can accurately be determined due to the lack of essential engineering data, Two three feet above the highest reasonably anticipated or historically recorded elevation of surface water in the drainage area in which where the development activity is to take place; or

~~(2) One foot above the level of the base flood elevation;~~

(2) where a less than fully developed upstream watershed was assumed and a base flood elevation was then determined either by an engineering study or by determining the depth of the discharge/flow over a natural topographic saddle, three feet above the level of the base flood elevation in the drainage area where the development activity is to take place; or

(3) where a fully developed upstream watershed was assumed and a base flood elevation was then determined either by an engineering study or by determining the depth of the discharge/flow over a natural topographic saddle, one and one-half feet above the level of the base flood elevation in the drainage area where the development activity is to take place; and

- (4) in order to prevent flood damage due to overland sheet flow, a minimum of one foot higher than the highest finished grade elevation immediately adjacent to the structure, except that garages and basements shall be protected in accordance with Section 10-1736(k).

**Section 2.** Section 10-192 of Chapter 10 of the Code of Laws of Leon County, Florida, is hereby amended as follows:

**Sec. 10-192. Special development standards for environmentally sensitive zones.**

Sec. 10-192.(a) thru (d) (same)

- (e) *Lake Iamonia special development zones.* Special development zones adjacent to Lake Iamonia are hereby designated within which the following minimum design and development standards shall apply, notwithstanding any less restrictive provisions in any state law or regulation or local ordinance:

- (1) *Zone A. Wetland and floodplain ecotone.* up through and including elevation 110 feet NGVD:

- a. *Development area limitations.* Clearing, soil disturbance, and building area shall not exceed the greater of 4,000 square feet or five percent of that part of the development site located in zone A, hereafter referred to as the base square footage. For purposes of calculating this base square footage, the septic tank and drainfield area shall not be included and gravel driveways kept on grade will be considered as 50% disturbed.

*Floor elevation.* No finished floor at or below elevation ~~109~~ 110 feet NGVD.

*Natural vegetation protection zone.* All vegetation shall be protected in a natural state from the water's edge or the normal water line, whichever provides the greater area of protection, to a minimum distance of 50 feet upland, except that established lawns existing on developed single-family lots prior to January 15, 1990, may continue to be maintained. Annual (or less frequent) burning within the natural vegetation protection zone is allowed, as well as selective removal of species which are intrusive to the native species, so as to improve the environmental function of the area.

- d. *Motor vehicle prohibition.* Automobiles, motorcycles, dune buggies, or other wheeled motorized vehicles and tracked vehicles shall not be allowed within any portion of zone A, including any portion of lake bottom periodically exposed as a result of natural or artificial drawdown, except as follows:

1. Entry shall be allowed into those areas which must be entered to provide reasonable access to structures, to approved boat launching areas, to public

1 parks, to approved rights-of-way, or to public roadways.

- 2
- 3 2. Lawn mowers shall be allowed in areas within zone A which lie landward
- 4 of the natural vegetation zone, and within the latter zone if permitted
- 5 pursuant to subsection (e)(1)c., unless otherwise prohibited by this article.
- 6
- 7 3. Entry shall be allowed where associated with bona fide public uses, such
- 8 as agency research, law enforcement, and approved lake restoration and
- 9 management activities.

- 10
- 11 (2) *Zone B. Transitional ecotone*, from elevation 110 to elevation 120 NGVD.
- 12
- 13 a. *Development area limitations*. A minimum of 50 percent of each site within zone
- 14 B shall remain natural and unaltered.
- 15

- 16 (3) *Prohibited land uses*. See Section 10-975.
- 17

18 Sec. 10-192.(f) thru (i) (same)

19 (Ord. No. 92-3, § 1(7-17), 1-28-92; Ord. No. 95-14, § 8, 9-12-95)

20

21

22

23 **Section 3.** Section 10-1722 of Chapter 10 of the Code of Laws of Leon County, Florida, is hereby

24 amended as follows:

25

26 **Sec. 10-1701. Short title.**

27

28 The provisions of this article shall constitute and be known and may be titled as the floodplain

29 management ordinance of the county adopted pursuant to the authority granted local government under Title

30 44 CFR 59 and 60. The County Administrator or designee shall administer and enforce all the provisions

31 of this article. Any designee of the County Administrator shall be established in writing.

32

33 (Code 1980, § 7-50; Ord. No. 89-44, § 2(7-111), 12-12-89)

34

35

36 **Section 4.** Section 10-1722 of Chapter 10 of the Code of Laws of Leon County, Florida, is hereby

37 amended as follows:

38

39 **Sec. 10-1722. Certification for certain construction.**

40

41 Every application for a building permit for a new building to be constructed shall be accompanied

42 by a flood certificate from a professional civil engineer registered in the state unless the application is for

43 an accessory structure of minimal value and is less than 300 square feet. The certificate at a minimum shall

44 have the following information submitted to the County:

45

- (1) The certificate shall certify one of the following statements:
- (a) All of the property is at or above the flood protection elevation as set forth in item's (1), (2), and (3) of the flood protection elevation definition in Section 10-1.
  - (b) Some or all of the property is located ~~within~~ below the existing 100 year flood elevation (base flood elevation). The base flood elevation must be provided along with the flood protection elevation and the required minimum finished floor elevation.
  - (c) All of the property is located at or above the 100 year flood elevation (base flood elevation), but some or all of the property is lower than the flood protection elevation as set forth in item's (1), (2), and (3) of the flood protection elevation definition in Section 10-1. The base flood elevation must be provided along with the flood protection elevation and the required minimum finished floor elevation.
- (2) Where appropriate, ~~the certificate shall certify one of the following statements:~~
- (a) The site of the proposed building is ~~not~~ in an area subject to flooding of the parcel that is at or above the 100-year (base flood) elevation as determined by a site plan with building location shown; or
  - (b) The following describes the area of the parcel located outside the floodplain that is at or above the 100-year (base flood) elevation. This statement should be followed by a layman's description of the area outside of the floodplain.
- (3) The Flood Insurance Rate Map (FIRM) panel number on which the property is located.
- (4) The parcel ID number.
- (5) The designated zone for the parcel from the FIRM maps.
- (6) A statement certifying that the site has been visited by the engineer.
- (7) The flood certificate must be signed and sealed by a professional civil engineer registered in the state in accordance with 61G15-23.002 F.A.C. The certificate will not be accepted if it is older than five years.
- (8) The engineer shall review all potential flood information sources to make a determination as to whether the property is located within a flood zone. At a minimum, the following sources must be reviewed:
- (a) Topographic information in 2 foot or 4 foot contour intervals.
  - (b) FIRM rate maps and accompanying profiles.

- (c) Any study or model available through the County files that would have pertinent flood elevation information.
  - (d) Any plat, subdivision, site plan or environmental permit file that would have pertinent flood elevation information.
  - (e) Aerial Photos
- (9) If any portion of the parcel is located in a flood area other than zone AE, whether FEMA designated or not, then the engineer shall determine an appropriate base flood elevation, a corresponding flood protection elevation, and a required minimum finished floor elevation. Supporting documentation for the base flood elevation must also be submitted with the flood certificate. At a minimum the following must be done:
- (a) Topographic information must be reviewed with 2 foot or 4 foot contour intervals. This information should be submitted with the flood certificate. Upstream and downstream constrictions should be analyzed.
  - (b) Review any model or plat available through the County files that would have pertinent flood elevation information.
  - (c) Where sufficient information is not conclusive for determining a 100-year base flood elevation, the elevation should be determined as identified in FEMA's publication titled: "Managing Floodplain Development in Approximate Zone A Areas", April 1995 or its successor.

(Code 1980, § 14(1); Ord. No. 79-44, § 2(7-11), 12-12-89)

**Section 5.** Section 10-1736 of Chapter 10 of the Code of Laws of Leon County, Florida, is hereby amended as follows:

**Sec. 10-1736. Generally.**

- (a) All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure.
- (b) All new or replacement water supply systems and sanitary sewage systems constructed in the special flood hazard areas shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters, and all on-site waste disposal systems shall be located so as to avoid impairment of them or contamination during flooding.
- (c) All new construction and substantial improvements of residential structures located within or in close proximity to special flood hazard areas designated on the FIRM's, FHBM's or FBFM's, or located within or in close proximity to other (i.e. non-designated) areas that are subject to flooding, shall be designed to have the lowest floor (including basement) elevated to at least the

1 flood protection elevation level or depth number specified for flood hazard areas unless the  
2 county is granted an exception by the Federal Emergency Management Agency for the allowance  
3 of basements. All manufactured homes to be placed or substantially improved within zones A1-  
4 30, AH, and AE shall be elevated on a permanent foundation such that the lowest floor of the  
5 manufactured home is at or above the flood protection elevation and is securely anchored to an  
6 adequately anchored foundation system in accordance with the provisions of subsections (a) and  
7 (e) of this section.  
8

9 Sec. 10-1736. (d) thru (i) (same)

10  
11 (i) In order to prevent flood damage due to overland sheetflow, all newly constructed structures and  
12 substantial improvements of structures, regardless of their location in or outside of an area  
13 subject to flooding, shall have their lowest finished floor elevation a minimum of one foot higher  
14 than the highest finished grade immediately adjacent to the structure.  
15

16 (k) The site shall be graded to prevent overland sheetflow from entering into garages and basements.  
17

18  
19 (Code 1980, § 7-56; Ord. No. 89-44, § 2(7-117), 12-12-89)  
20  
21

## 22 Section 6. Conflicts

23  
24 All ordinances or parts of ordinances in conflict with the provisions of the Ordinance are hereby  
25 repealed to the extent of such conflict, as of the effective date of this Ordinance, except to the  
26 extent of any conflicts with the Tallahassee Leon County Comprehensive Plan, as amended,  
27 which provisions shall prevail over any parts of this Ordinance which are inconsistent, either in  
28 whole or in part, with the Comprehensive Plan.  
29

## 30 Section 7. Severability

31  
32 If any section, subsection, sentence, clause or phrase of this Ordinance is, for any reason, held to  
33 be invalid or unconstitutional by any court of competent jurisdiction, such portion shall be  
34 deemed a separate, distinct and independent provision and, such holding shall not affect the  
35 validity of the remaining portions of this Ordinance.  
36  
37

## 38 Section 8. Effective Date

39  
40 This ordinance shall have effect upon becoming law.  
41  
42  
43  
44

DULY PASSED AND ADOPTED BY the Board of County Commissioners of Leon County,  
Florida, this \_\_\_\_ of \_\_\_\_.

LEON COUNTY, FLORIDA

BY: \_\_\_\_\_

TONY GRIPPA, CHAIRMAN  
BOARD OF COUNTY

COMMISSIONERS

ATTEST:  
BOB INZER, CLERK OF THE COURT  
LEON COUNTY, FLORIDA

APPROVED AS TO FORM  
LEON COUNTY ATTORNEY'S OFFICE

BY: \_\_\_\_\_

BY: \_\_\_\_\_

HERBERT W.A. THIELE, ESQ.  
COUNTY ATTORNEY

**DRAFT**